

REMARKS

Claims 51-67 are pending. Claim 51 is independent, and claims 52-67 depend from it. Claim 51 is amended with this reply. Support for the amendment can be found, for example, at page 14 of the specification.

Rejections Under 35 U.S.C. § 103(a)

Andreviski in view of Stapleton

Claims 51-55, 58-67, and 66-67 have been rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,882,903 to Andreviski et al. ("Andreviski") in view of U.S. Patent No. 5,922,604 to Stapleton et al. ("Stapleton"). Office Action at 3. Claim 51 is independent.

Claim 51 relates to a device for duplicating and characterizing nucleic acids in a reaction chamber. The reaction chamber is defined by a chamber support having an optically permeable first surface facing the reaction chamber, a chamber body sealingly and unreleasably placed on the chamber support, and a rigid, optically permeable chip. The chamber support includes a recess having an edge configured to support a chip, and an inlet providing fluid communication between the reaction chamber and an environment external to the reaction chamber. The chip is sealingly supported by the edge of the recess. The chip has a second surface facing the reaction chamber, the second surface having an array of multiple different polynucleotide probes immobilized thereon. The first and second surfaces are substantially parallel.

The Examiner argues that Andreviski teaches ". . . a chamber body sealed onto the chamber support (210 and 216) having a recess having an edge (211) . . . and an optically permeable chip (251, column 11, line 63-column 12, line 12) sealed to the supporting edge of the recess (Column 5, lines 3-21)." Office Action at 3. Stapleton is cited for evidence that "PCR amplification chambers having arrayed probes were well known in the art at the time the invention was made." Office Action at 4. Applicants respectfully disagree with the Examiner's interpretation of Andreviski.

At column 5, lines 3-21, Andreviski describes a first assembly that includes:

(a) structural ring 210;

(b) an upper cover 251 which includes

- (i) membrane 241, and
- (ii) locking ring 214; and

(c) a lower cover 252 which includes

- (i) membrane 242, and
- (ii) locking ring 215.

The device taught by Andreovski **requires** at least five distinct elements to assemble a reaction chamber: one structural ring, two membranes, and two locking rings. The membranes are each held between their respective locking rings and the structural ring by a compression fit.

Claim 51 recites "a chamber body sealingly placed on the chamber support." At page 14, the specification describes "... chamber body 1 in a rigid, unreleasable connection with chamber support 5 through its bearing surface 4. This connection, for example, can be realized by adhesion . . . a melt connection or by manufacturing same integrally."

Rather than a chamber body sealingly placed on the chamber support, Andreovski teaches a compression fit to hold a membrane between the structural ring and the locking ring. The membrane is not rigid (see Andreovski at FIGS. 4B-4C, column 4, lines 30-55, and at column 9, lines 43-63). In this sense, Andreovski does not teach a chip but instead deformable membranes (column 9, lines 43-45).

Claim 51 has been amended with this reply to specify (1) that the chamber support is sealingly and unreleasably placed on the chamber support, and (2) that the optically permeable chip is a rigid, optically permeable chip. These features are not taught or suggested by Andreovski or Stapleton.

Response to Examiner's Arguments

The Examiner finds the above arguments unpersuasive "because the open claim language 'comprising' encompasses the additional elements in the device of Andreovski." Office Action at 9. However, the Examiner's reasoning does not address the relevant questions: whether Andreovski and Stapleton teach all of the claimed limitations; and, if so, whether a person of ordinary skill in the art would be motivated to combine them in the claimed fashion. In other words, the proper question is not whether some combination of features found in the cited

references and selected with the benefit of hindsight might fall within the scope of the claims, but whether "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a) (emphasis added).

As discussed above, Applicants contend that the cited references do not teach all of the claimed limitations. Furthermore, motivation to combine these references to arrive at a device of claim 51 is lacking. In particular, the motivation to omit or substitute elements of Andreviski's device, e.g., membranes; locking rings; and a structural ring.

The characteristics of Andreviski's device do not suggest certain characteristics of the claimed device. For example, nonrigid membranes held by tension between rings do not suggest a chamber body sealingly and unreleasably placed on a chamber support and including a recess having an edge configured to support a rigid, optically permeable chip which is sealingly supported by the edge of the recess. There is no clear analogy between the elements of Andreviski's device and the claim limitations. If structural ring 210 is taken to be a chamber body, it might be argued that sidewall 211 represents a recess; and membrane/upper cover 241/251 might be taken as a rigid chip (Applicants do not concede that such features are analogous but are considering them so solely for the purpose of the argument. In particular, Applicants believe that membrane 241/upper cover 251 not equivalent to the rigid chip recited in claim 51). It should be noted that if the structural ring is taken to be the chamber body, then only membrane 242/lower cover 252 could be considered as a chamber support. However, Andreviski's device makes no distinction between the upper and lower covers, they are evidently interchangeable. Nor, in this view, does Andreviski teach a chamber support (i.e., membrane 242/lower cover 252) having an inlet providing fluid communication between the reaction chamber and an environment external to the reaction. Accordingly, a person of ordinary skill in the art would not be motivated by Andreviski in view of Stapleton to make a device having a distinct chamber support, chamber body, and chip, as found in claim 51. More particularly, there is no motivation to make the device where the chamber support includes an inlet.

In this interpretation of Andreviski, furthermore, no edge of sidewall 211 is configured to support a rigid chip. Rather, membrane/upper cover 241/251 is held in place by a tensioning

force supplied by locking ring 214 and sidewall 211 at notch 212. Remove the locking ring and the tensioning force is also removed. Accordingly, a person of ordinary skill in the art would not, from the teachings of Andreovski in view of Stapleton, be motivated to make a device having a chamber body sealingly and unreleasably placed on the chamber support and including a recess having an edge configured to support a rigid chip.

For at least the reasons discussed above, claim 51 and the claims that depend from it are patentable over Andreovski in view of Stapleton. Applicants therefore respectfully ask the Examiner to reconsider and withdraw the rejection.

Andreovski in view of Stapleton and McBride

Claims 56 and 57 have been rejected under § 103(a) as being obvious over Andreovski in view of Stapleton and in further view of U.S. Patent No. 6,296,752 to McBride et al. ("McBride"). Office Action at 8-9.

As discussed above, Andreovski and Stapleton do not teach all the limitations of independent claim 51. McBride does not remedy this defect. The combination of Andreovski, Stapleton, and McBride does not teach, suggest or motivate a person skilled in the art to make the devices of claims 56 and 57. For at least these reasons, Applicants request that the Examiner reconsider and withdraw this rejection.

Andreovski in view of Stapleton and Fodor

Claim 65 has been rejected under § 103(a) as being obvious over Andreovski in view of Stapleton in further view of U.S. Patent No. 5,744,101 to Fodor et al. ("Fodor"). See the Office Action at 9-10.

As discussed above, Andreovski and Stapleton do not teach all the limitations of independent claim 51. Fodor does not remedy this defect. The combination of Andreovski, Stapleton, and Fodor does not teach, suggest or motivate a person skilled in the art to make the device of claim 65. For at least these reasons, Applicants request that the Examiner reconsider and withdraw this rejection.

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CONCLUSION

Applicants ask that all claims be allowed. Please apply any charges or credits to deposit account 19-4293.

Respectfully submitted,

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